JOHN W. H. DOUBLER.

Improvement in Combination Locks.

No. 115,037. Patented May 23, 1871.

Fig: 1.

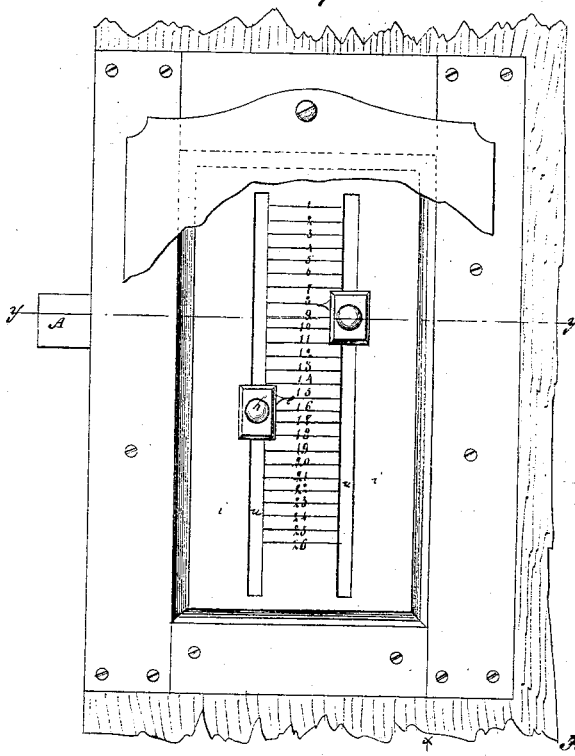


Fig: 2.

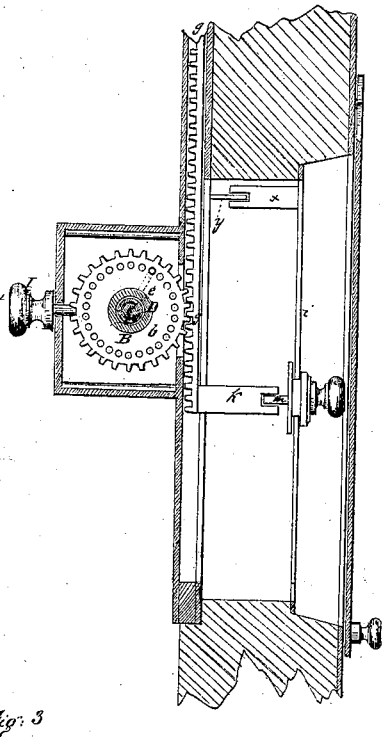


Fig: 3

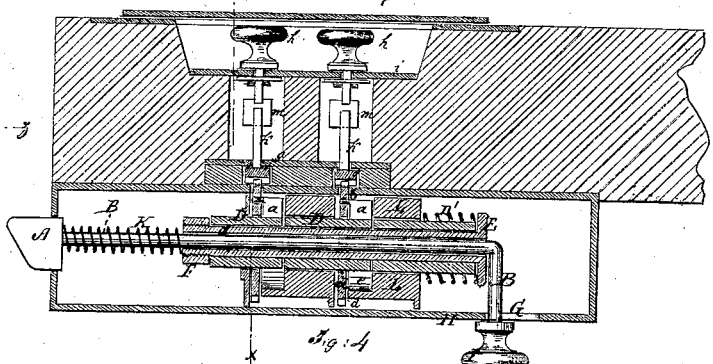


Fig: 5.

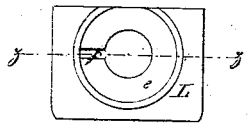


Fig: 6

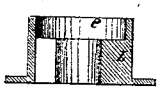


Fig: 7.

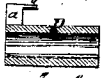
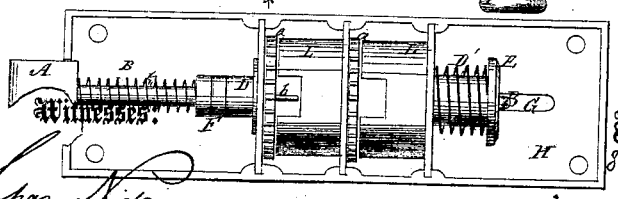


Fig: 8

Fig: 4



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UNITED STATES PATENT OFFICE.

JOHN W. H. DOUBLER, OF DARLINGTON, WISCONSIN, ASSIGNOR TO HIMSELF AND W. LOGUE, OF SAME PLACE.

IMPROVEMENT IN COMBINATION LOCKS.

Specification forming part of Letters Patent No. 115,037, dated May 23, 1871.

To all whom it may concern:

Be it known that I, JOHN W. H. DOUBLER, of Darlington, in the county of La Fayette and State of Wisconsin, have invented a new and Improved Combination Lock; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in combination locks; and it consists in the arrangements and combinations of devices hereinafter described.

Figure 1 is a front elevation of my improved lock; Fig. 2 is a sectional elevation of the same taken on the line *x x* of Fig. 3; Fig. 3 is a horizontal section of the same taken on the line *y y* of Fig. 1; Fig. 4 is a view of the lock with the back plate removed; Fig. 5 is an end elevation of one of the parts employed in securing the bolt; Fig. 6 is a section of Fig. 5 on the line *z z;* Fig. 7 is a sectional elevation of another part employed in securing the bolt; and Fig. 8 is an end view of Fig. 7.

Similar letters of reference indicate corresponding parts.

A is the bolt-head, and B the round shank thereof, which are similar in some respects to an ordinary spring-latch bolt. This shank passes loosely through a long hollow tube, C, which is arranged within several short tubes, D, and is provided with a collar, E, at the rear end, and a nut, F, at the end next to the head A of the bolt. Behind the collar E the shank is bent perpendicular to the tube C and extends through a slot, G, in the inside plate H of the lock, receiving a knob, I, on the outer end for working it in setting the combination previous to locking; the part of the shank between the nut F and the head A has a spiral spring, K, arranged on it to spring the bolt out when, by closing the door after the combination has been set, the bolt has been forced into the lock. The sectional tubes D have each, except the last one to the right, a radial arm, *a*, at the right end, from the left end of which, at the outer extremity, is a pin, *b*, running parallel with the tubes, and entering a perforated toothed wheel, *d*, mounted loosely, one on each tube D, between tubular blocks L fixed in the case, and supporting the short tubes D, also having an annular recess in the left end, in which the arm *a* of the tube D, at the left, may revolve. At the bottom of the recess *e* of each block L is a radial slot, *f*, which will allow the arm *a* of the short tube D to enter when turned to coincide with it, and let the said tube D be moved to the right. These slots *f* of all the blocks L are in the same horizontal line. D′ is a spiral spring, arranged on the right-hand tube D, between the last block L and the collar E, to throw the bolt back when all the arms *a* are brought into line with the slots *f* to receive them. The wheels *d* gear with reciprocating toothed racks *g*, which are connected to sliding knobs *h* arranged to work along a slotted plate, *i*, for operating them, said plate having scales along the slots for indicating, by means of pointers *l* on the knobs, when the wheels have been moved the distance from hole to hole. The connection of the studs with the knobs is made by the notched arms *k* and short studs *m*, which engage each other, as shown in Fig. 2, to admit of applying the lock to doors of different thicknesses without having to adjust them to each.

I propose in some cases, as when applying the lock to a safe, to apply strong steel bars under the knobs *h* and over the slots *n* in plate *i* to slide back and forth with the knob, but to keep the slots covered, so that the lock cannot be filled with powder.

The lock is set to the required combination of figures, when the bolt is drawn back, by the spring D, and the flanges *u* are in the slots *f;* by sliding the knobs along the index-plates to the numbers required, and forcing the bolt out by the knob I so that the pins *b* will engage the wheels, and then sliding the knobs away from the numbers, and thereby turning the arms *a* from the slots *f*, by which the tubes D and the inner tube C will be held in the position toward the bolt-head A, which will allow spring K to force the bolt out after the door is closed, and retain it in that position until, by shifting the knobs back to the numbers by which they were set, the slots *f* will be brought to coincide with the arms *a*, allowing the spring D′ to shift the tubes C and D

back to the right, throwing the bolt back by the action of the collar E or end of tube C on the elbow of shank B.

I may employ as many of the wheels, short tubes D, and tubular blocks L as may be preferred, each additional set of which will multiply the combinations which the previous sets are capable of making, by the number of holes or teeth contained in the wheel.

The index-plate has a slotted stud, *x*, projecting from the rear side, and engaging a stud, *y*, on the back plate of the lock, to insure the placing of the index-plate to indicate the position of the wheels or the holes therein relatively to the pins *b* when the arms *a* are in the slots *f*. The spacing lines or grooves of the index-plate are intended to be deep enough to allow the pointers to spring down into them sufficiently to make a noise, so that the position of the knobs may be known in the dark by counting the clicks. The combination may be changed at will when the bolt is drawn back by spring D, as will be readily understood.

The lock may be used in the same way with only one pin-hole in each wheel instead of a hole to each number and tooth, but in this case it would be necessary to disconnect the wheels with the toothed racks to change the combination, which would then be done by shifting the racks along the wheels. I may employ other means for turning the wheels *d;* for example, other toothed wheels with a pointer working over a circular index may be used.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The spring-bolt A B, tubes C and D, the tubular recessed and fixed blocks L, perforated toothed wheels *d*, and spring D′, combined and operating substantially in the manner described.

2. The combination, with the wheels *d*, of the racks *g*, sliding knobs, and the index-plate, substantially as specified.

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Witnesses:
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